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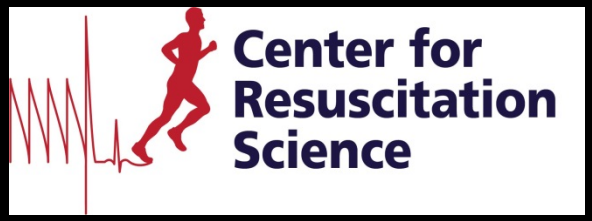

Hemodynamic Decompensation in Normotensive Patients Admitted to the ICU with Pulmonary Embolism

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BACKGROUND

- Hemodynamic instability in pulmonary embolism is associated with high morbidity and mortality.
- Patients with submassive pulmonary embolisms are initially hemodynamically stable, but they are at risk of hemodynamic decompensation.
- The incidence and precipitants of hemodynamic instability in initially hemodynamically stable patients with pulmonary embolism have not been fully studied

OBJECTIVE

What causes hemodynamic decompensation of normotensive patients admitted to the ICU with PE?

Investigate the causes of hemodynamic decompensation and clinical outcomes for normotensive patients admitted to the intensive care unit (ICU) with pulmonary embolism (PE).

METHODS

- Single center, retrospective study

Inclusion criteria
Age 18+
PE diagnosis (using ICD codes from ED)
Admitted to ICU between 2008-2018
Normotensive (no pressors within 30 minutes of ICU admission & first SBP > 90)

METHODS

- **Primary Outcome**

Hemodynamic decompensation (vasopressor support within the first 48 hours of ICU admission)

- **Secondary Outcomes**

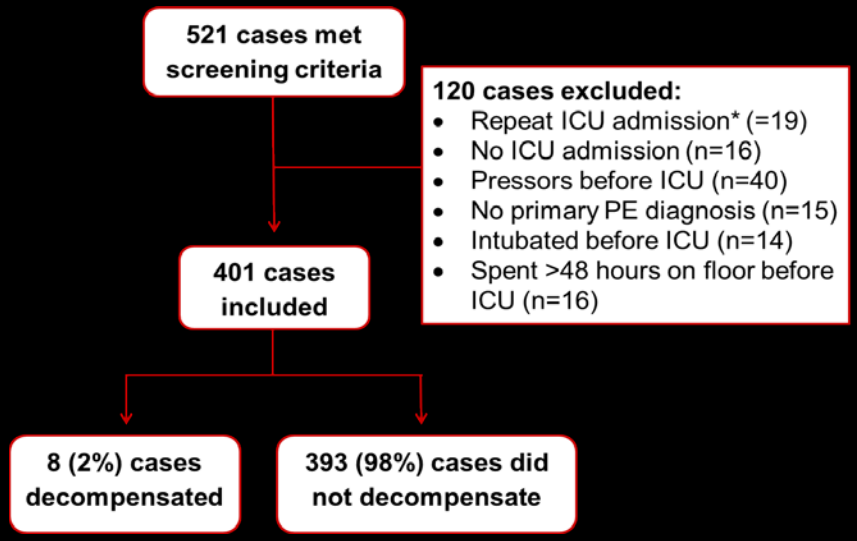
1. Other critical care interventions
2. Mortality

- Statistical Analysis

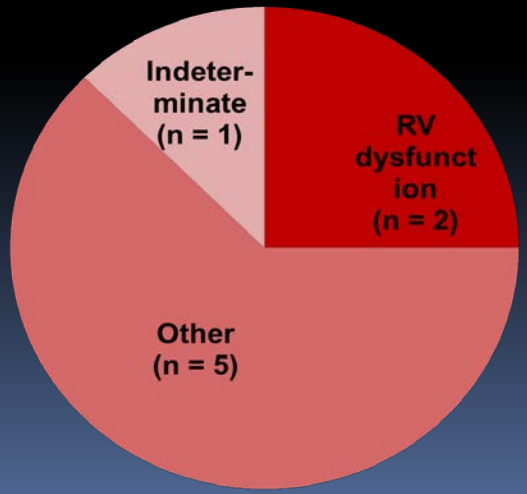
1. Descriptive statistics at mean +/- SD
2. Fischer exact tests for between group comparisons

RESULTS

COHORT SECTION



CAUSES OF DECOMPENSATION



Other
Bleeding (n=2)
Sepsis (n=1)
Medication-related (n=1)
Primary cardiac (n=1)

RESULTS

- Other Critical care Needs and Mortality

	ALL (n=401)	Pressors (n=8)	No Pressors (n=393)	P-value
Non-invasive ventilation	22 (5.5%)	1 (12.5%)	20 (5.1%)	0.35
Intubation	5 (1.2%)	3 (37.5%)	2 (0.5%)	0.0001
Thrombolysis	34 (8.5%)	1 (12.5%)	33 (8.4%)	0.51
Death	20 (5.0%)	4 (50%)	16 (4.1%)	0.0003

Cause of decompensation	Clinical vignette
RV dysfunction	65yo woman with metastatic anal cancer admitted with saddle PE with RV dysfunction requiring pressors.
	75yo woman admitted with large bilateral PE with RV dysfunction requiring pressors and thrombolysis, complicated by PEA arrest and death.
Bleeding	66yo woman with lung cancer admitted with PE with RV dysfunction and worsened upper extremity hematomas requiring transient pressors and blood transfusions.
	74yo woman with recent abdominal surgery admitted with PE with RV dysfunction complicated by duodenal ulcers requiring pressors and IR embolization.
Sepsis	73yo man with Hodgkin lymphoma admitted with respiratory distress and bilateral segmental PE without RV strain, found with pulmonary infection requiring pressors and eventually passed away.
Medication-related	91yo woman with complex medical history admitted with PE with RV dysfunction requiring transient pressors in the setting of receiving hydralazine.
Primary cardiac	23yo woman with Fragile X syndrome admitted with biventricular heart failure and PE with RV dysfunction requiring pressors. She was made CMO and passed away.
Indeterminate (unclear if RV dysfunction or bleeding)	77yo man admitted with GI bleed and PE with RV dysfunction treated with cathether-directed thrombolysis, complicated by hypotension requiring pressors and PEA arrest. He was placed on ECMO and passed away.

Conclusion

- Hemodynamic decompensation requiring pressor support was extremely rare.
- Decompensation attributed to underlying PE was found in <1% of cases.
- Major Bleeding was equally likely the cause of decompensation as was the underlying PE
- Future studies should carefully track the etiologies of decompensation and death in subjects with PE